

## REMARKS

Claims 1 – 26 are pending and stand rejected. The Examiner's reconsideration of the rejection is respectfully requested in view of the following remarks.

Claims 1-26 were rejected for obviousness as anticipated over Lehman in view of USP 5,924,103 to Ahmed et al.

The rejection is respectfully traversed.

Lehman is directed to a new type of information exchange operator for a tuple space. Lehman teaches that one of the benefits of a tuple space is "time uncoupling", in which time-disjoint processes may communicate seamlessly (Column 2, lines 22-25). Lehman introduces a new tuple space operator, called "Rhonda", which includes both a tuple and template as arguments and, when performed, atomically swaps its tuple with a tuple from another Rhonda operator when both the processes' templates match each other's respective tuples. The swap is atomic and enables blind, anonymous exchanges based entirely on the matching query templates and not on any other properties. One of the objects of Lehman is to provide "synchronous, anonymous rendezvous and data exchange". However, Lehman refers to "synchronization" not in terms of time synchronization but rather in terms of data synchronization for ensuring multiple processes are in communication. Thus, Lehman does not disclose or suggest "a shared memory connected to said communications pathway for maintaining a tuple space on which said entities post and receive messages synchronized to discrete time intervals", as recited in claim 1.



Ahmed is directed to a database management system that manages the concurrent performance of non-atomic database transactions. Ahmed teaches providing data integrity controls for non-atomic transactions that are works in progress. Ahmed also discloses, in column 4, lines 35-46, a database management system including tables for providing consistent storage of global data objects in a set of global tuples and private data objects in a set of private tuples. While Ahmed, in column 1, lines 61-64, uses the term “time interval”, it is in reference to the time that such a work-in-progress may require to complete. As taught by Ahmed, such works in progress usually require some sort of controls for maintaining data integrity and consistency while a transaction that is a work in progress is being completed. In no way does Ahmed teach or fairly suggest “said entities post and receive messages synchronized to discrete time intervals”.

By way of contrast, the claimed invention addresses the problems of the introduction of new features in the telephone switching systems, the co-ordination and allocation of resources in the provisioning of a service, or the introduction and interaction of new components in multiple component systems. The claimed invention provides a computing environment where entity interaction and conflict can be detected and resolved during operation. This is in contrast to the cited references and other prior art systems in which such interactions and conflicts had to be identified and addressed prior to operation. The tuple space of the claimed invention is synchronized such that entities operate in a permission-action loop, rather than the prior art publish-subscribe system. By provision of this system, new entities, features, knowledge



sources, processes or components can interact with previous ones before activities dangerous to the operation of the system are undertaken in a manner to ensure that system degradation or failure does not occur. All entities must obey a convention for interaction that is carried out by the synchronized tuple space. As taught on page 7 of the present application, the convention is “an entity that intends to perform an action that involves a significant change in the environment, solicits advice for permission for the action during a specified number of time slices before the entity can proceed with the action”. Neither Lehman nor Ahmed is directed to provision of such functionality and thus do not teach or fairly suggest, alone or in combination, a system for controlling and co-ordinating activities among entities in an information process environment that comprises a shared memory for maintaining a tuple space on which entities post and receive messages synchronized to discrete time intervals, as set forth in claim 1. The Examiner’s stated on page 3 that “the Ahmed reference further teaches the system uses query generation for conducting work-in-progress data retrieval and enables long transactions with persistently stored data changes and non-blocking concurrency control to overcome unacceptable data locking for works-in-progress applications”. Applicant respectfully submits that the present invention is not directed to data retrieval from works-in-progress or the problem of unacceptable data locking.

Accordingly, claim 1 is not rendered obvious over Ahmed in view of Lehman.

Claims 2-8 depend directly or indirectly on claim 1. They are not rendered obvious by Ahmed and Lehman for the reasons given above.



Claim 9 recites, inter alia, “providing a tuple space in a shared memory adapted for operation in discrete time intervals connected to said communications pathway; and posting and receiving messages of said entities to and from said tuple space synchronized to said discrete time intervals”. As indicated above with reference to claim 1 and Ahmed and Lehman, it cannot be said that claim 9 and its dependent claims 10-16 are obvious. The same is true of claim 17 and its dependent claims 18-25, which each recite “providing a tuple space in a shared memory adapted for operation in discrete time intervals connected to said communications pathway”.

The dependent claims are patentable for additional reasons. For example, neither Ahmed or Lehman provides teaching or suggestion of “ignoring an advise action or overriding responding messages”, essentially as claimed in claim 18. Nor does Ahmed or Lehman teach “providing a tuple space in a shared memory adapted for operation in discrete time intervals connected to said communications pathway; and posting and receiving messages of said application entities and said service entities to and from said tuple space synchronized to said discrete time intervals”, as claimed in claim 26.



For the foregoing reasons, the present application including claim 1 - 26 is  
believed to be in condition for allowance.

Respectfully submitted,



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